

REMARKS

This amendment is filed as a submission under the rules concerning requests for continued examination (RCE). This submission is responsive to the final Office Action mailed on August 10, 2004.

Claims 1-7, 9-19, 44, and 45 are currently pending, claims 1-4, 9, and 11 have been amended, claims 13, 18, and 19 have been cancelled, withdrawn claims 20-43 have also been cancelled, and claims 46-53 are new. Applicant acknowledges and appreciates the Examiner's indication of allowable subject matter in claim 45. In view of the foregoing amendments, as well as the following remarks, Applicant respectfully submits that this application is in complete condition for allowance and requests reconsideration of the application in this regard.

Rejections of Claims Under 35 U.S.C. § 102

Claims 11-13 and 18-19 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,035,804 (hereinafter Arami). Of the rejected claims, claims 13, 18, and 19 are cancelled and claim 11 is the only independent claim. The Examiner contends that Arami shows or teaches all the elements of the rejected claims, which is an absolute requirement for anticipation under 35 U.S.C. § 102. Applicant respectfully disagrees for the reasons set forth below.

Applicant's independent claim 11, as amended, sets forth an apparatus that includes "a hinge coupling said chamber base to said access member." The hinge includes "a slotted opening and a hinge pin positioned in said slotted opening, said slotted opening oriented such that said access member moves vertically relative to said chamber base for uniformly

compressing said sealing member when said access member is in the closed position and said processing space is evacuated through said vacuum port.” The Examiner contends that Arami discloses an “access member (12) which can be opened or closed” and a “hinge coupling (12) (*sic*).” The Examiner further asserts that “[S]ince the lid closes vertically on part (Fig 2-3 and Col 3 lines 15-20) in Arami the hinge functions as claimed and therefore reads on the claim properly.” Applicant respectfully disagrees for the reasons set forth below.

Applicant observes that the Examiner has identified an object labeled with reference numeral (12) in Arami as both an access member and a hinge coupling. For purposes of responding to this Office Action, Applicant presumes that, as described by Arami, the object labeled with reference numeral (12) is an arm that is used to pivot electrode (9) away from the chamber and the access member is the electrode (9). The Applicant requests that the Examiner clarify the use of reference numeral (12) in subsequent communications.

Arami discloses at column 3, lines 15-20, column 3, lines 26-29, and column 6, lines 42-50 that the upper electrode (9) is moved vertically by an “upper electrode hoisting and lowering mechanism 10.” The vertical movement of upper electrode (9) is suggested by the dotted and dashed lines in Figure 2 of Arami. The arm (12) supporting the upper electrode (9) is pivoted about what Applicant perceives from the Arami drawings to be a conventional hinge coupling having a circular opening. Hence, a cylindrical hinge pin positioned in this circular opening of approximately equal diameter would not move within the opening in response to evacuation of the processing space.

Instead, the upper electrode hoisting and lowering mechanism (10) in Arami causes vertical movement of the upper electrode (9) and the arm (12). The upper electrode (9) is not moved vertically in response to movement of a hinge pin in a slotted opening. In fact, Arami

states at col. 3, lines 27-29 that “[i]t is essential only that the upper electrode hoisting mechanism 10 moves the electrode vertically.” Applicant construes this statement in Arami to mean that mechanism (10) is the only structure disclosed in Arami that permits vertical movement of the electrode (9) and arm (12). Arami does not disclose a hinge for an access member having a hinge pin movable in a slotted opening.

When the electrode (9) in Arami is moved into the closed position by mechanism (10) and the processing space is evacuated, atmospheric pressure acting on electrode (9) will cause the electrode (9) to move toward chamber section (4). This will cause the electrode (9) to pivot slightly about the hinge pin. Because the hinge consists of a cylindrical hinge pin moving in a round opening, the electrode (9) will cantilever about the hinge pin. The result is that different portions of the sealing member (7) will be compressed by different amounts about its perimeter during evacuation. So, the seal (7) is not uniformly compressed, as required by Applicant’s claim 1. All portions of the electrode (9) will move laterally as the electrode (9) cantilevers about the hinge pin because the movement is purely vertical but, because of the pivoting motion relative to chamber section (4), is required to have a lateral component.

Applicant’s claimed slotted opening constrains lateral movement between the access member and chamber base. This reduces abrasion of the surface of the sealing member and extends the lifetime of the sealing member. Moreover, the access member and chamber base are uniformly sealed along all points of contact with the sealing member due to the uniform substantially vertical compression. This does not occur in Arami.

In order for a reference to anticipate the invention in a claim, the reference must teach each and every element in the precise arrangement set forth in the claim. If the reference fails to teach even one of the claimed elements, the reference does not and cannot anticipate the

claimed invention. The standard for anticipation is not whether structure in the reference “functions as claimed,” as suggested in the Office Action. Arami does not disclose a hinge for an access member having a hinge pin movable in a slotted opening. Hence, Arami does not teach this claimed element. It necessarily follows that Arami does not anticipate independent claim 11. For at least this reason, Applicant respectfully requests that this rejection be withdrawn.

Because claim 12 depends from independent claim 11, Applicant submits that this claim is also patentable for at least the same reasons discussed above. Furthermore, this claim recites a unique combination of elements not taught, disclosed, or suggested by Arami.

Rejection of Claims under § 103(a)

Claims 1, 2, 5, and 44

Claims 1, 2, 5, and 44 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,660,744 (hereinafter Sekine) in view of U.S. Patent No. 5,919,332 (hereinafter Koshiishi). Of the rejected claims, claim 1 is the only independent claim. Applicant respectfully traverses the rejection for the reasons set forth below.

In contrast to Applicant’s claim 1, Sekine does not disclose a component arrangement in which a powered electrode is positioned below the gas supply port, a vacuum port is located in said chamber below said powered electrode and has a centerline oriented substantially perpendicular to said powered electrode, and a vacuum distribution baffle is positioned above the vacuum port and below the powered electrode. Sekine states at column 21, lines 54-57 that the baffle is “not shown.” Hence, the Examiner’s reference in the Office Action to a baffle either in Fig. 1 or in Fig. 6 is improper because, according to the written description in

Sekine, the baffle is not shown in the patent drawings and any attempted alternative interpretation by the Examiner of these figures in Sekine is improper. Therefore, Sekine cannot disclose the arrangement of the gas supply port, the vacuum port, the powered electrode, and the plate of the vacuum distribution baffle as set forth in Applicant's claim 1.

In further contrast to Applicant's claim 1, Koshiishi's vacuum port (42) is not centrally located in the chamber below the powered electrode (6), considering a reference frame in which the powered electrode (6) is also positioned below the gas inlet port (22). Instead, the vacuum port (42) is positioned radially outward or laterally of the powered electrode (6). The space below the powered electrode (6) in Koshiishi is occupied by structure for transferring AC power from power supply (44) to the powered electrode (6), structure for transferring DC power from power supply (12) to the powered electrode (6), and structure for moving the electrode (6). The baffle (43) is annular and, due to the component arrangement in Koshiishi, the powered electrode (6) is positioned inside a central bore of the annular baffle (43). Hence, the baffle (43) is not positioned above the vacuum port (42) and below the powered electrode (6). In fact, the baffle (43) is positioned above at least the lower half of the powered electrode (6). In addition, the centerline of the vacuum port (42) is oriented radially relative to the powered electrode (6), and is not oriented substantially perpendicular to the powered electrode (6), as recited in claim 1. It follows that the Examiner has failed to support a *prima facie* case of obviousness as the combination of Sekine with Koshiishi does not disclose all limitations as set forth in Applicant's claim 1. For at least this reason, Applicant respectfully requests that the Examiner withdraw the rejection.

Because claims 2, 5, and 44 depend from independent claim 1, Applicant submits that these claims are also patentable for at least the same reason discussed above. Furthermore,

these claims recite unique combinations of elements not taught, disclosed or suggested by the combination of Sekine and Koshiishi.

Claims 1, 2, and 5

Claims 1, 2, and 5 also stand rejected under 35 U.S.C. § 103(a) as unpatentable over JP 3-002377 (hereinafter Matsuda) in view of Koshiishi. Applicant respectfully traverses the rejection for the reasons set forth below.

Applicant has explained the deficiencies of Koshiishi in the above remarks. The arrangement for the gas port, baffle, and powered electrode disclosed in Matsuda is substantially identical to the arrangement in Koshiishi. Specifically, the baffle (16) is annular and surrounds the powered electrode. In addition, the vacuum port (15) is not located in the chamber below the powered electrode (3), considering a reference frame in which the powered electrode (3) is positioned below the gas inlet port (9), nor does the vacuum port (15) have a centerline oriented substantially perpendicular to the powered electrode (3). Instead, the vacuum port (15) is located laterally of the powered electrode (3) and has a centerline oriented radially relative to the powered electrode (3). Similar to Koshiishi, the space below the powered electrode (3) is hollow and is filled by structure to transfer power from the power supply (12) to the powered electrode (3). Hence, Matsuda suffers from the same deficiencies as Koshiishi. It follows that the Examiner has failed to support a *prima facie* case of obviousness as the combination of Matsuda with Koshiishi does not disclose all limitations as set forth in Applicant's claim 1. For at least this reason, Applicant respectfully requests that this rejection be withdrawn.

Because claims 2 and 5 depend from independent claim 1, Applicant submits that these claims are also patentable for at least the same reasons discussed above. Furthermore,

these claims recite unique combinations of elements not taught, disclosed or suggested by the combination of Matsuda with Koshiishi.

Claim 3

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sekine in view of U.S. Patent No. 5,710,407 (hereinafter Moore). The Examiner contends that it would have been obvious to one of ordinary skill in the art to modify Sekine to include an “adjustable mechanism for varying width workpieces” as allegedly taught by Moore. Applicant respectfully disagrees with the Examiner’s contention for the reasons set forth below.

Because claim 3 depends from independent claim 1, Applicant submits that this claim is also patentable for at least the same reasons discussed above. Furthermore, this claim recites a unique combination of elements not taught, disclosed or suggested by the combination of Sekine and Moore.

Claim 3 is patentable for at least an additional reason. Claim 3 recites that “said workpiece-holding portion includes first and second side rails that are adjustable in width to accommodate workpieces of different widths positioned therebetween.” Moore does not disclose a workpiece-holding portion (i.e., susceptor) having side rails adjustable in width to accommodate workpieces of varying width. The Abstract of Moore states that the system can process “a multiplicity of wafers or a large single wafer, e.g., 200 mm (8 inches), 250 mm (10 inches), 300 mm (12 inches).” The Abstract of Moore does not state that the susceptor includes side rails that are adjustable in width or even side rails. The Written Description of Moore does not disclose that the susceptor includes side rails that are adjustable in width. Instead, the susceptor described in Moore includes round pockets each of which accepts a workpiece of a

given diameter or width (e.g., 200 mm, 250 mm, 300 mm). No portion of these pockets is adjustable in width for accommodating workpieces of different widths. For example, Moore does not describe that a pocket for a 250 mm workpiece has side rails adjustable in width to change the pocket width for also receiving a 200 mm workpiece.

Prima facie obviousness requires that all claim limitations be taught by the prior art. *See* MPEP 2143.03. Moore does not disclose side rails adjustable in width to accommodate workpieces of different widths. Furthermore, neither Sekine nor Koshiishi discloses side rails adjustable in width to accommodate workpieces of different widths, as admitted in the Office Action. Consequently, the Examiner has failed to support *prima facie* obviousness. For at least this additional reason, Applicant respectfully requests that this rejection be withdrawn.

Claims 4, 6, 7, 9, 10, and 14-17

Claims 4, 6, 7, 9, 10, and 14-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sekine in view of Arami. Claim 14 is the only independent claim from among the group of rejected claims. The Examiner contends that it would have been obvious to one of ordinary skill in the art to modify Sekine to include a plasma chamber with a hinge coupling as allegedly taught by Arami. Applicant respectfully disagrees for the reasons set forth below.

Applicant's independent claim 14 sets forth an apparatus having a powered electrode positioned on one side of a workpiece holding portion and a ground electrode positioned on an opposite side of the workpiece holding portion relative to the powered electrode. Claim 14 recites that the powered electrode and the ground electrode are approximately equidistant from the workpiece holding portion. The Examiner admits that neither Sekine nor Arami teaches, discloses or suggests this arrangement for the workpiece

holding portion relative to the powered and ground electrodes. Instead, the Examiner contends that claim 14 would have been obvious for discovering optimum values of an apparatus parameter.

The rationale that the claimed value of the parameter is the result of optimization does not apply under a 35 U.S.C. Section 103 rejection when the alleged optimized parameter is not recognized by the applied reference to be a result-effective variable. See In re Antonie, 559 F.2d 618, 621 (CCPA 1977). Neither Sekine nor Arami recognizes the existence of a range of positions for the position of the workpiece holding portion relative to the ground and powered electrodes. Consequently, the Examiner has failed to properly support a *prima facie* case of obviousness. Therefore, claim 14 is patentable for at least this additional reason.

Because claims 15-17 depend from independent claim 14, Applicant submits that these claims are also patentable for at least the same reasons discussed above. Furthermore, these claims recite unique combinations of elements not taught, disclosed or suggested by the combination of Sekine and Arami.

Because claims 4, 6, 7, 9, and 10 depend from independent claim 1, Applicant submits that these claims are also patentable for at least the same reasons discussed above. Furthermore, these claims recite unique combinations of elements not taught, disclosed or suggested by the combination of Sekine and Arami. For example, claim 4 is also patentable for at least the same reasons as independent claim 11, and claim 6 is patentable for at least the same reasons as claim 14.

New Claims

Claims 46-52 are submitted as new claims. As these claims depend directly or

indirectly from a patentable claim 1, Applicants submit that these claims are also patentable. Furthermore, claims 46-52 recite unique combinations of elements not taught, disclosed or suggested by the references of record.


CONCLUSION

Applicant has made a *bona fide* effort to respond to each and every requirement set forth in the Office Action. In view of the foregoing amendments and remarks, this application is submitted to be in complete condition for allowance and, accordingly, a timely notice of allowance to this effect is earnestly solicited. If there is any additional matter that may be resolved by telephone or fax, the Examiner is invited to contact the undersigned to expedite issuance of this application.

Applicant does not believe that any fees are due in connection with this response other than a two month time extension. However, if such petition is due or any other fees are necessary, the Commissioner may consider this to be a request for such and charge any necessary fees to deposit account 23-3000.

Respectfully submitted,

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